

Environmental Public Health in Washington State: How Complete are the Data?

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Extended Abstract

Growing scientific evidence indicates that increasing chemical contamination of the environment is linked with many chronic diseases and disabilities, including asthma, birth defects, developmental problems, and cancer. Since World War II, more than 85,000 synthetic chemicals have been registered for use in the US and approximately 2,000 new ones are added each year. At the same time, chronic diseases and disabilities have reached epidemic proportions, affecting more than 100 million men, women and children.

Given this situation, it is important to improve our understanding of the links between chronic diseases and disabilities and chemical contaminants in the environment. Understanding these relationships is essential for designing effective policies and programs to prevent, reduce, manage and mitigate exposures and related adverse health outcomes, and to evaluate the effectiveness of risk reduction initiatives. In a democratic society, this information is also a vital element of the public's 'right-to-know'.

The objectives of this preliminary study¹ on the information available on this subject in Washington (WA) State are: 1. To collect and summarize information on health outcomes and environmental conditions in WA related to contaminants, 2. To assess the 'completeness' of this information, and 3. To identify information gaps and needs on how environmental contaminants affect health in WA. Health effects associated with environmental contaminants were identified using the Collaborative for Health and Environment's database on 'Chemical Contaminants and Human Disease', as well as the current state of scientific knowledge. The study reports on health effects with "strong" or "good" evidence of association/causality with environmental contaminants only, according to the database.

Various types of information on WA were collected and summarized, including health databases and surveillance information, epidemiological studies, environmental monitoring studies and databases; and information from government reports, scientific studies and reputable websites. The preliminary report summarizes recent national, state and local sources of information on health outcomes, body burdens, and levels of environmental contaminants in WA. Specifically, the study collected and summarized information on asthma and cardiovascular disease, 22 types of cancer, 24 types of reproductive, birth, developmental and neurobehavioral effects, 'pesticide incidents', and body burdens of environmental contaminants, as well as information on levels of contaminants in air, drinking water, food, soil, and the built environment.

The study's findings show that information on asthma, cardiovascular disease and cancer in WA is relatively good. Indeed, the State's Cancer Registry was awarded an "A" by the Trust for America's Health. However, with the exception of asthma, information on these health conditions is rarely linked with information on environmental quality. Information on reproductive, birth, developmental and neurobehavioral effects is relatively poor, and there is no WA specific data available for many of these health conditions. For example, the State does not have a comprehensive, publicly accessible birth defects registry, although the Department of Health is establishing one. In contrast, WA is one of only a few states with systems for tracking and reporting 'pesticides incidents'. More State-wide information on body burdens of environmental contaminants is needed.

Information on environmental contaminants in air, drinking water and food is relatively good, although State-wide information on drinking water and food is not easily publicly accessible or available in a form that is easy to understand. For example, although there is more information available on contaminants in food in WA in the national Total Diet Study than for any other state, it is only available in huge electronic databases that comprise only quantitative information, with no explanatory text. There is relatively good information available on levels of metals and the health risks associated with many hazardous waste sites in

¹ The fully referenced preliminary study is available under the title: "Health and Environmental Contaminants in Washington State: What We Know and What We Need to Know" at www.iceh.org

the State. However, information on levels of pesticides, persistent organic pollutants and lead is needed. Similarly, there is a need for better information on environmental contaminants in the built environment, including data on heavy metals, pesticides, persistent organic pollutants and other environmental contaminants.

The study found that information on health in WA and information on environmental contaminants in the State are rarely linked with each other. Information on environmental contaminants is not usually used to understand information on health, and similarly information on health is not used to understand information on environmental contaminants. The work being done under the Department of Health's Environmental Public Health Tracking System is a start, but more is needed. Related to the need for stronger linkages between health and environmental information, there is a need for better information on geographical and temporal trends in health and environmental contaminants. This type of information is needed to understand trends across the State and over time.

There is also a need for better data on the exposures of WA residents to environmental contaminants, including population exposures to ambient levels of environmental contaminants, and exposures of "at risk" populations, such as children and the elderly, First Nations and high fish consumers, ethnic minorities, and low income groups. Generic information on background levels of environmental contaminants in the environment is unlikely to accurately reflect human exposures.

Exposure information usually focuses on individual contaminants, is media specific, and is measured over a specific period of time. Thus, it rarely takes account of combined exposures to all environmental contaminants, total exposures from all pathways, or exposures over an entire lifetime. However, environmental contaminants can act synergistically, exposures from different pathways can affect the same biological systems, and it can take years of exposure to result in health effects. For this reason, there is an urgent need for multi-contaminant, multi-media approaches to understand total cumulative exposures from all contaminants, all exposures pathways, and aggregate exposures over the human lifetime.

There is a need for much better tools for communities to understand the available environmental and health information. This includes publicly accessible, queryable databases and maps that contain health, environmental and risk information relevant to local communities. The Department of Ecology's Environmental Information System contains some geo-referenced environmental information, but it is not linked with any health or risk information. .

There is a lack of information on the economic costs of environmentally-attributable diseases and disabilities in Washington State. To address this need, the study estimated the economic costs of childhood cancers attributable to environmental exposures. Depending on the assumptions used, these costs range from \$13-30 million for the children diagnosed in a single year. Cost estimates for other chronic health conditions will be estimated in future work.

In conclusion, there is an urgent need to strengthen our information on the relationships between health and environmental contaminants in WA. This information will help in the design and evaluation of policies and programs to protect and promote public health. Moreover, many exposures to contaminants are involuntary and the public has a 'right to know' about them and their potential effects. Even though there is an extensive scientific debate about the precise fractions of many chronic diseases and disabilities can reasonably be attributed to environmental exposures, we do know that a significant proportion is preventable, with substantial health and associated economic benefits.